



#### SKILLSHEET 10.1

## Graphing linear equations

To graph a linear equation using the  $x$ - and  $y$ -intercept method, follow these steps.

Step 1 Find the  $x$ -intercept by substituting  $y = 0$  into the equation.

Step 2 Find the  $y$ -intercept by substituting  $x = 0$  into the equation.

Step 3 Plot the  $x$ - and  $y$ -intercepts on a set of axes, and rule a straight line through them.

#### WORKED EXAMPLE

Graph the line with equation  $y = 2x + 8$ , using the  $x$ - and  $y$ -intercept method.

##### THINK

- 1 Write the equation.
- 2 To find the  $x$ -intercept, substitute  $y = 0$  into the equation.
- 3 Solve for  $x$ .
- 4 Write the coordinates of the  $x$ -intercept.
- 5 To find the  $y$ -intercept, substitute  $x = 0$  into the equation.
- 6 Evaluate.
- 7 Write the coordinates of the  $y$ -intercept.
- 8 Plot the intercepts on a set of axes and rule a straight line through them.

##### WRITE

$$y = 2x + 8$$

$$\text{When } y = 0, 0 = 2x + 8.$$

$$2x = -8$$

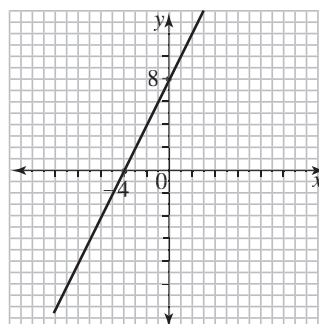
$$x = -4$$

$$\text{So the } x\text{-intercept is } (-4, 0).$$

$$\text{When } x = 0, y = 2 \times 0 + 8.$$

$$y = 8$$

$$\text{So the } y\text{-intercept is } (0, 8).$$





### Try these

Graph each line with the following equations using the  $x$ - and  $y$ -intercept method.

**1**  $y = 2x + 6$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**2**  $y = -2x + 4$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**3**  $y = x + 5$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**4**  $y = 2x - 3$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**5**  $y = -2x + 8$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**6**  $y = -2x - 2$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....



**7**  $y = 5x + 1$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**8**  $y = -x + 12$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**9**  $y = 6x + 3$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....

**10**  $y = 3x - 6$

When  $y = 0$ , .....

.....

.....

So the  $x$ -intercept is .....

When  $x = 0$ , .....

.....

So the  $y$ -intercept is .....



## SKILLSHEET — ANSWERS

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### Graphing linear equations

